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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/713,833	11/14/2003	William James Moore	SP-1756.1US	2557

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EXAMINER	
LEWIS, BEN	
ART UNIT	**PAPER NUMBER**
1795	
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12/13/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/713,833	Applicant(s) MOORE ET AL.	
	Examiner Ben Lewis	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 9/13/07.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16 and 24-51* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16 and 24-51* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 November 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

Detailed Action

1. The Applicant's amendment filed on September 13th, 2007 was received. Claims 48-51 were added. Claims 17-23 were cancelled.

2. The text of those sections of Title 35, U.S.C. code not included in this action can be found in the prior Office Action (issued on May 16th, 2007).

Claim Rejections - 35 USC § 103

3. Claims 1-4, 9-13, 16, 40-44, 47 and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Malservisi et al. (U.S. Pub. No. 2004/0115532 A1) in view of Tada et al. (U.S. Patent No. 5,209,995).

With respect to claims 1, 9,12, 40 and 43, Malservisi et al disclose zinc powders for use in electrochemical cells (title). Malservisi et al. also disclose, an LR-06 electrochemical cell comprising a positive terminal fabricated from a conductive material, a manganese dioxide cathode in electrical contact with the positive terminal, an anode comprising a battery grade zinc powder, the zinc powder being suspended in a gelled KOH electrolyte, a separator electronically separating the cathode and the anode, and a current collector inserted into the anode (Paragraph 0023).

With respect to the electrode having less than 50ppm of mercury, Malservisi et al teach that alkaline cell technology has evolved significantly over the past 10 years or so.

For instance, lower mercury and mercury-free cells were introduced in the 90's (Paragraph 0003).

With respect to the zinc powder having a tap density greater than 2.8g/cc and less than 3.65g/cc, Malservisi et al. teach the use of a battery grade zinc powder comprising stranded particles fabricated from a zinc metal, the stranded particles having a tap density of at most about 3.2 g/cc, preferably at most about 2.8 g/cc (Paragraph 0015).

With respect to the zinc powder occupying less than 28.0 volume percent of said second electrodes volume. Malservisi et al. teach that two varieties of gelled anodes were fabricated, the first comprising 67% by weight zinc powder and 33% by weight gelled electrolyte and the second comprising 62% by weight zinc powder and 38% by weight gelled electrolyte. The control anode was fabricated from 67% by weight zinc powder and 33% by weight of gelled electrolyte. The gelled electrolyte comprised 98% by weight of KOH 40%/ZnO 3% and 2% by weight of polyacrylic acid (Carbopol ™ 940) as gelling agent (Paragraph 0080-0081).

$\rho_{(Zinc)}$ = 7.14g/cc, $\rho_{(KOH\ 40\%)}$ = 1.39g/cc, $\rho_{(ZnO)}$ = 5.6g/cc, $\rho_{(Carbopol\ 940)}$ = 1.41g/cc

Basis = 100g anode material

Volume Zn = 62g/ $\rho_{(Zinc)}$ = 8.6cc, Volume KOH = (0.98* 38g)g/ $\rho_{(KOH)}$ = 27.9cc

Volume Carbopol 940 = (0.02*38g)/ $\rho_{(carbopol\ 940)}$ = 0.54cc

Volume % Zinc = (Vol zn / □Vol) x 100 = 23.2 vol % zinc

With respect to the BET surface area being greater than 400 cm^2/g, Malservisi et al do not disclose BET specific surface area data. However, Tada et al. recognize the benefit

of changing the surface area of zinc particles. Tada et al. disclose zinc alkaline cells (title) wherein If the bulk specific gravity of the zinc alloy powder would be less than 2.90 (grams per cm.sup.3), on the one hand, the action of suppressing gases from generating maY be reduced because the shapes of the zinc alloy powder particles may become so nearly acicular that the specific surface area of the zinc alloy powder particles becomes large enough to make their reactivity too high. If the bulk specific gravity thereof would be larger than 3.50 (grams per cm.sup.3), on the other hand, the discharge performance may be lowered because the shapes of the zinc alloy powder particles become so nearly spherical that their surface area becomes smaller, thereby making their reactivity too low (Col 2 lines 40-54). Therefore, it would have been within the skill of the ordinary artisan to change the surface are of the zinc particles of Malservisi et al. such that the surface area is within the range of that claimed by applicant in order to provide sufficient reactivity. *Discovery of optimum value of result effective variable in known process is ordinarily within skill of art.* In re Boesch, CCPA 1980, 617 F.2d 272, 205 USPQ215.

With respect to claims 2-4 and 51, Malservisi et al. teach that two varieties of gelled anodes were fabricated, the first comprising 67% by weight zinc powder and 33% by weight gelled electrolyte and the second comprising 62% by weight zinc powder and 38% by weight gelled electrolyte. The control anode was fabricated from 67% by weight zinc powder and 33% by weight of gelled electrolyte. The gelled electrolyte comprised

98% by weight of KOH 40%/ZnO 3% and 2% by weight of polyacrylic acid (Carbopol ™ 940) as gelling agent (Paragraph 0080-0081).

$\rho_{(Zinc)}$ = 7.14g/cc, $\rho_{(KOH\ 40\%)}$ = 1.39g/cc, $\rho_{(ZnO)}$ = 5.6g/cc, $\rho_{(Carbopol\ 940)}$ = 1.41g/cc

Basis = 100g anode material

Volume Zn = 62g/ $\rho_{(Zinc)}$ = 8.6cc, Volume KOH = (0.98* 38g)g/ $\rho_{(KOH)}$ = 27.9cc

Volume Carbopol 940 = (0.02*38g)/ $\rho_{(carbopol\ 940)}$ = 0.54cc

Volume % Zinc = (Vol zn / □Vol) x 100 = 23.2 vol % zinc

With respect to claims 41-42, Malservisi et al. teach the use of a battery grade zinc powder comprising stranded particles fabricated from a zinc metal, the stranded particles having a tap density of at most about 3.2 g/cc, preferably at most about 2.8 g/cc (Paragraph 0015). Malservisi et al. teach that two varieties of gelled anodes were fabricated, the first comprising 67% by weight zinc powder and 33% by weight gelled electrolyte and the second comprising 62% by weight zinc powder and 38% by weight gelled electrolyte. The control anode was fabricated from 67% by weight zinc powder and 33% by weight of gelled electrolyte. The gelled electrolyte comprised 98% by weight of KOH 40%/ZnO 3% and 2% by weight of polyacrylic acid (Carbopol ™ 940) as gelling agent (Paragraph 0080-0081).

Malservisi et al do not disclose resistivity data. However, it is the position of the examiner that such properties are inherent, given that Malservisi et al and the present application utilize the same materials and same anode compoosition. A

reference which is silent about a claimed invention's features is inherently anticipatory if the missing feature is necessarily present in that which is described in the reference. In re Robertson, 49 USPQ2d 1949 (1999).

With respect to claims 10-11, Malservisi et al. teach the use of a battery grade zinc powder comprising stranded particles fabricated from a zinc metal, the stranded particles having a tap density of at most about 3.2 g/cc, preferably at most about 2.8 g/cc (Paragraph 0015).

With respect to claims 13 and 44, Malservisi et al. teach the use of a battery grade zinc powder comprising stranded particles fabricated from a zinc metal, the stranded particles having a tap density of at most about 3.2 g/cc, preferably at most about 2.8 g/cc (Paragraph 0015). Malservisi et al. teach that two varieties of gelled anodes were fabricated, the first comprising 67% by weight zinc powder and 33% by weight gelled electrolyte and the second comprising 62% by weight zinc powder and 38% by weight gelled electrolyte. The control anode was fabricated from 67% by weight zinc powder and 33% by weight of gelled electrolyte. The gelled electrolyte comprised 98% by weight of KOH 40%/ZnO 3% and 2% by weight of polyacrylic acid (Carbopol ™ 940) as gelling agent (Paragraph 0080-0081).

Malservisi et al do not disclose any KOH absorption data. However, it is the position of the examiner that such properties are inherent, given that Malservisi et al and the present application utilize the same materials and same anode compoosition. A reference which is silent about a claimed invention's features is inherently anticipatory if the missing feature is necessarily present in that which is described in the reference. In re Robertson, 49 USPQ2d 1949 (1999).

With respect to claims 16 and 47, Malservisi et al. teach that the zinc powder comprises particles fabricated from a zinc alloy, the alloy consisting essentially of zinc, aluminum, bismuth and indium (Paragrap 0018). For ppm values see Table 4.

TABLE 4

	Alloy Chemistry (ppm)					ZnO
Atomization process	Al	Bi	In	Pb	ZnO (%)	Ratio to Reference
Impulse atomisation process (strand shaped)	50	100	200		0.03	0.25
	70	100	200		0.04	0.33
	60	100	200		0.03	0.25
	75	100	200		0.02	0.17
Conventional air atomisation	100	100	200		0.12	1
Impulse atomisation process (strand shaped)		300	300		0.08	0.15
		300	300		0.16	0.30
		300	300		0.09	0.17
Conventional air atomisation		300	300		0.54	1

4. Claims 24, 25, 30, 31, 35, 36 and 48-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Malservisi et al. (U.S. Pub. No. 2004/0115532 A1) in view of Tada et al. (U.S. Patent No. 5,209,995).

With respect to claims 24, 25, 30,31, 35 and 36, Malservisi et al disclose zinc powders for use in electrochemical cells (title). Malservisi et al. also disclose, an LR-06 electrochemical cell comprising a positive terminal fabricated from a conductive material, a manganese dioxide cathode in electrical contact with the positive terminal, an anode comprising a battery grade zinc powder, the zinc powder being suspended in a gelled KOH electrolyte, a separator electronically separating the cathode and the anode, and a current collector inserted into the anode (Paragraph 0023).

With respect to the electrode having less than 50ppm of mercury, Malservisi et al teach that alkaline cell technology has evolved significantly over the past 10 years or so. For instance, lower mercury and mercury-free cells were introduced in the 90's (Paragraph 0003).

With respect to the zinc powder having a tap density greater than 2.8g/cc and less than 3.65g/cc, Malservisi et al. teach the use of a battery grade zinc powder comprising stranded particles fabricated from a zinc metal, the stranded particles having a tap density of at most about 3.2 g/cc, preferably at most about 2.8 g/cc (Paragraph 0015).

With respect to the zinc powder occupying less than 28.0 volume percent of said second electrodes volume. Malservisi et al. teach that two varieties of gelled anodes were fabricated, the first comprising 67% by weight zinc powder and 33% by weight

gelled electrolyte and the second comprising 62% by weight zinc powder and 38% by weight gelled electrolyte. The control anode was fabricated from 67% by weight zinc powder and 33% by weight of gelled electrolyte. The gelled electrolyte comprised 98% by weight of KOH 40%/ZnO 3% and 2% by weight of polyacrylic acid (Carbopol ™ 940) as gelling agent (Paragraph 0080-0081).

$\rho_{(Zinc)}$ = 7.14g/cc, $\rho_{(KOH\ 40\%)}$ = 1.39g/cc, $\rho_{(ZnO)}$ = 5.6g/cc, $\rho_{(Carbopol\ 940)}$ = 1.41g/cc

Basis = 100g anode material

Volume Zn = 62g/ $\rho_{(Zinc)}$ = 8.6cc, Volume KOH = (0.98* 38g)g/ $\rho_{(KOH)}$ = 27.9cc

Volume Carbopol 940 = (0.02*38g)/ $\rho_{(carbopol\ 940)}$ = 0.54cc

Volume % Zinc = (Vol zn / □Vol) x 100 = 23.2 vol % zinc

Malservisi et al. does not specifically teach that the second electrode comprises no more than 4.3 grams of zinc powder. However, it would have been obvious to one of ordinary skill in the art to produce an electrode with the amount of zinc powder as claimed by applicant at the time the invention was made because the amount of electrode active material in batteries vary according to the required battery capacity.

With respect to the cell OCV, Malservisi et al. teach the use of a battery grade zinc powder comprising stranded particles fabricated from a zinc metal, the stranded particles having a tap density of at most about 3.2 g/cc, preferably at most about 2.8 g/cc (Paragraph 0015). Malservisi et al. also teach that a given mixture is comprised of two or more types of zinc powders made by impulse atomisation or by impulse atomisation and conventional techniques and having different particle shapes and/or particle sizes distributed around different mean particle sizes which are then combined

to form a hybrid powder. By adjusting the powder mix in terms of both particle size and shape the performance characteristics of a given electrochemical cell can be optimized (Paragraph 0084). The fine air atomised powder has a particle size distribution were 100% of the particles are less than 75□m and the conventional air atomised powder has a particle size distribution within 425□m and 54□m (Paragraph 0085).

Malservisi et al do not disclose discharging and OCV data. However, it is the position of the examiner that such properties are inherent, given that Malservisi et al and the present application utilize zinc powders with the same particle sizes and tap density and with same materials with the same composition. A reference which is silent about a claimed invention's features is inherently anticipatory if the missing feature is necessarily present in that which is described in the reference. In re Robertson, 49 USPQ2d 1949 (1999).

With respect to the BET surface area being greater than 400 cm^2/g, Malservisi et al do not disclose BET specific surface area data. However, Tada et al. recognize the benefit of changing the surface area of zinc particles. Tada et al. disclose zinc alkaline cells (title) wherein If the bulk specific gravity of the zinc alloy powder would be less than 2.90 (grams per cm.sup.3), on the one hand, the action of suppressing gases from generating maY be reduced because the shapes of the zinc alloy powder particles may become so nearly acicular that the specific surface area of the zinc alloy powder particles becomes large enough to make their reactivity too high. If the bulk specific gravity thereof would be larger than 3.50 (grams per cm.sup.3), on the other hand, the discharge performance may be lowered because the shapes of the zinc alloy powder

particles become so nearly spherical that their surface area becomes smaller, thereby making their reactivity too low (Col 2 lines 40-54). Therefore, it would have been within the skill of the ordinary artisan to change the surface are of the zinc particles of Malservisi et al. such that the surface area is within the range of that claimed by applicant in order to provide sufficient reactivity. *Discovery of optimum value of result effective variable in known process is ordinarily within skill of art.* In re Boesch, CCPA 1980, 617 F.2d 272, 205 USPQ215.

With respect to claims 48, 49 and 50, Malservisi et al. teach that two varieties of gelled anodes were fabricated, the first comprising 67% by weight zinc powder and 33% by weight gelled electrolyte and the second comprising 62% by weight zinc powder and 38% by weight gelled electrolyte. The control anode was fabricated from 67% by weight zinc powder and 33% by weight of gelled electrolyte. The gelled electrolyte comprised 98% by weight of KOH 40%/ZnO 3% and 2% by weight of polyacrylic acid (Carbopol ™ 940) as gelling agent (Paragraph 0080-0081).

$\rho_{(Zinc)}$ = 7.14g/cc, $\rho_{(KOH\ 40\%)}$ = 1.39g/cc, $\rho_{(ZnO)}$ = 5.6g/cc, $\rho_{(Carbopol\ 940)}$ = 1.41g/cc

Basis = 100g anode material

Volume Zn = 62g/ $\rho_{(Zinc)}$ = 8.6cc, Volume KOH = (0.98* 38g)g/ $\rho_{(KOH)}$ = 27.9cc

Volume Carbopol 940 = (0.02*38g)/ $\rho_{(carbopol\ 940)}$ = 0.54cc

Volume % Zinc = (Vol zn / □Vol) x 100 = 23.2 vol % zinc

5. Claims 5-8, 14-15, 26-29, 32-34, 37-39 and 45-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Malservisi et al. (U.S. Pub. No. 2004/0115532 A1) in view of Tada et al. (U.S. Patent No. 6,436,539 B1) and further in view of Armacanqui et al. (U.S. Pub. No. 2004/0033418).

With respect to claims 5-7, 26-29, 32-34, 37-39, Malservisi et al. as modified by Tada et al. disclose zinc powders for use in electrochemical cells (title) in paragraphs 2 and 7 above. Malservisi et al. as modified by Tada et al. do not specifically teach using potassium hydroxide solution that is 36%, 34% or 32% by weight potassium hydroxide. However, Armacanuqui et al. discloses an alkaline cell with performance enhancing additives (title) wherein, Armacanqui et al. teach that the present invention recognizes that advantages may be achieved in a cell whose electrolyte has a concentration of 30% to 40%. Furthermore, as is discussed in more detail below, cell performance may enhanced using an anode gel having a KOH concentration between 20% and 30% (Paragraph 0041). Therefore it would have been obvious to one of ordinary skill in the art at time the invention was made use the electrolyte of Armancanuqui et al. in the battery of Malservisi et al. as modified by Tada et al. because Armacanuqui et al. teach that cell performance is particularly enhanced when the KOH concentration is between 30% and 40% (Paragraph 0044).

With respect to claim 8, Malservisi et al. teach the use of a battery grade zinc powder comprising stranded particles fabricated from a zinc metal, the stranded particles having a tap density of at most about 3.2 g/cc, preferably at most about 2.8 g/cc (Paragraph 0015). Malservisi et al. teach that two varieties of gelled anodes were fabricated, the first comprising 67% by weight zinc powder and 33% by weight gelled electrolyte and the second comprising 62% by weight zinc powder and 38% by weight gelled electrolyte. The control anode was fabricated from 67% by weight zinc powder and 33% by weight of gelled electrolyte. The gelled electrolyte comprised 98% by weight of KOH 40%/ZnO 3% and 2% by weight of polyacrylic acid (Carbopol ™ 940) as gelling agent (Paragraph 0080-0081).

Malservisi et al do not disclose resistivity data. However, it is the position of the examiner that such properties are inherent, given that Malservisi et al and the present application utilize the same materials and same anode composition. A reference which is silent about a claimed invention's features is inherently anticipatory if the missing feature is necessarily present in that which is described in the reference. In re Robertson, 49 USPQ2d 1949 (1999).

6. With respect to claims 14-15 and 45-46, the disclosure Malservisi et al as modified by Tada et al. differs from Applicant's claims in that Malservisi et al. as modified by Tada et al. do not disclose that D_{50} is between 100 and 130μm or between 110 and 120μm. However, Malservisi et al. as modified by Tada et al. recognize that

adjusting the powder mix in terms of both particle size and shape the performance characteristics of a given electrochemical cell can be optimized (Paragraph 0084).

Improved performance characteristics may also be derived from mixtures of the above produced zinc alloy powders. A given mixture is comprised of two or more types of zinc powders made by impulse atomisation or by impulse atomisation and conventional techniques and having different particle shapes and/or particle sizes distributed around different mean particle sizes which are then combined to form a hybrid powder. By adjusting the powder mix in terms of both particle size and shape the performance characteristics of a given electrochemical cell can be optimized (Paragraph 0084). The fine air atomised powder has a particle size distribution were 100% of the particles are less than 75μm and the conventional air atomised powder has a particle size distribution within 425μm and 54μm (Paragraph 0085).

. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use zinc particles where D_{50} is between within the applicants claimed particle size range in order improve the performance of the electrochemical cell. *Discovery of optimum value of result effective variable in known process is ordinarily within skill of art.* In re Boesch, CCPA 1980, 617 F.2d 272, 205 USPQ215.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The cited references include general teachings and relevant features as to the state of the art at the time of the invention.

U.S. Patent No. 6,991,875 B2

Response to Arguments

7. Applicant's arguments filed on September 13th, 2007 have been fully considered but they are not persuasive.

Applicant's principal arguments are

(a) Applicants submit that the Tada et al. reference does not disclose a zinc powder with a BET specific surface area greater than 400 cm^2/g. The portion of Tada et al. cited by the Examiner does not contain an express disclosure of a numeric range of BET specific surface area. The cited portion only expressly teaches a numeric range of bulk specific gravity, namely a range between 2.90 g/cm^3 - 3.50 g/cm^3, which is a different measurement than the BET specific surface area. Bulk specific gravity is expressed as g/cm^3, whereas BET specific surface area is expressed in cm^2/g.

Applicants further submit that the Tada et al. reference instead teaches away from the claimed limitation. As cited by the Examiner, the Tada et al. reference teaches that reactivity can become too low if the surface area of the particles becomes too small and that reactivity can become too high if the surface area of the particles becomes too large. The Tada et al. reference therefore implies that there is an upper limit and a lower limit to the surface area of particles which should be utilized in the zinc alkaline cell to achieve higher reactivity.

In contrast, all of the pending claims include a limitation that the BET specific surface area is at least greater than 400 cm^2/g. The Tada et al. reference fails to teach or even suggest a BET specific surface area with at least 400 cm^2/g. This claim limitation is distinguishable from the lack of any such teaching in Tada et al., which instead specifically teaches away from a large surface area to avoid reactivity becoming too high. Accordingly, Applicants submit

(b) Additionally, claim 4 of the pending application is turther distinguishable t rom the cited references. In the Office Action, the Examiner represented that the Malservisi et al. reference teaches a zinc powder occupying 23.2 volume percent of the second electrode's volume. However, according to our calculations, the Malservisi et al. reference teaches a minimum of 24.7 volume percent of zinc powder. In the Office Action, the Examiner appears to have miscalculated the volume percent of zinc powder. First, the Examiner does not use the correct density for KOH. The density which is used

in the Examiner's calculations is the density of KOH in solution. If the Examiner had separately calculated KOH, then the Examiner should have used the density of KOH as a solid, which is about 2.04 g/cc.

In response to Applicant's arguments, please consider the following comments.

(a) With respect to the BET surface area being greater than 400 cm^2/g, Malservisi et al do not disclose BET specific surface area data. However, Tada et al. recognize the benefit of changing the surface area of zinc particles. Tada et al. disclose zinc alkaline cells (title) wherein If the bulk specific gravity of the zinc alloy powder would be less than 2.90 (grams per cm.sup.3), on the one hand, the action of suppressing gases from generating may be reduced because the shapes of the zinc alloy powder particles may become so nearly acicular that the specific surface area of the zinc alloy powder particles becomes large enough to make their reactivity too high. If the bulk specific gravity thereof would be larger than 3.50 (grams per cm.sup.3), on the other hand, the discharge performance may be lowered because the shapes of the zinc alloy powder particles become so nearly spherical that their surface area becomes smaller, thereby making their reactivity too low (Col 2 lines 40-54). Therefore, it would have been within the skill of the ordinary artisan to change the surface are of the zinc particles of Malservisi et al. such that the surface area is within the range of that claimed by applicant in order to provide sufficient reactivity. *Discovery of optimum value of result effective variable in known process is ordinarily within skill of art.* In re Boesch, CCPA

1980, 617 F.2d 272, 205 USPQ215. (Examiner notes that Tada et al. teach a direct relationship between the surface area of zinc particles and their reactivity. Therefore it is within the skill of one of ordinary skill in the art to adjust the surface area of zinc particles to achieve a desired reactivity given this teaching of Tada et al.)

(b) Malservisi et al. teach the use of 40% KOH solution therefore the density of 40% KOH solution was used in the calculations. Applicant is advised to perform the calculations using the density of 40% KOH solution as taught by Malservisi et al.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ben Lewis whose telephone number is 571-272-6481. The examiner can normally be reached on 8:30am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Susy Tsang-Foster
SUSY TSANG-FOSTER
SUPERVISORY PATENT EXAMINER

Ben Lewis

Patent Examiner
Art Unit 1745